

REMARKS

Entry of the foregoing, re-examination and reconsideration of the subject matter identified in caption, as amended, pursuant to and consistent with 37 C.F.R. §1.111, and in light of the remarks which follow, are respectfully requested.

As correctly noted in the Office Action Summary, Claims 1-4 are pending in the application and are under consideration.

By the above amendments, Claim 1 has been revised in response to the 35 U.S.C. §112, second paragraph, rejection and is further discussed below. In addition, Claims 1-4 have been revised to correct minor informalities and to better place the claims in conformance with U.S. practice.

Claim 1 stands rejected under 35 U.S.C. §112, second paragraph, for the reasons set forth at page 2 of the Official Action. This rejection has been obviated, in part, by the above amendments. In particular, with respect to the phrase "type", it has been removed from the claim.

Regarding the recitation of "high melt strength polypropylene," the Examiner has asserted it is not adequately defined in the Specification. The undersigned notes that this is a §112, first paragraph, type of rejection rather than second paragraph. Nonetheless, in addressing the merits thereof, it is noted that these resins contain long chain branching in their molecular structure, which are quite different from conventional polypropylene resins which are normally linear. Due to the presence of long chain branches, the

rheological behavior of high melt strength polypropylene is quite similar to that of high pressure low density polyethylene (LDPE). In particular, it exhibits strain hardening behavior in an extensional flow field like fiber spinning, film blowing, blow molding and extrusion coating. Moreover, this material has been commercialized by the Himont Corporation in 1990, and characteristics thereof may be found in ANTEC 1994, PP 1243-46, "Performance of high melt strength (HMS) polypropylene resins in extrusion coating." Thus, the skilled artisan would be fully apprised of the scope and meaning of the claim as written. Accordingly, Claim 1 is in full compliance with 35 U.S.C. §112, second paragraph.

Claims 1-4 stand rejected under 35 U.S.C. §103(a) as being obvious over *DE '611* (German Patent Document DE 195 11 611 A1) in view of *Nakagawa et al* (U.S. Patent No. 4,907,957). This rejection is traversed for the following reasons.

The present invention relates to a bottle or similar container which is produced by a combined extrusion/blow molding process. Moreover, the invention relates to an extrusion/blow molding process, together with a granulate starting material for the production of a bottle or similar material. Some of the advantages associated with the present invention includes the production of extruded/blow molded bottles of plastic having a greatly reduced material weight, superior mechanical strength and rigidity. Hence, the bottles are easily and conveniently handled.

In accordance with the invention, and as set forth in independent Claim 1, an extruded/blow molded bottle having an extruded wall structure is provided. The bottle includes an intermediate layer of foamed plastic and outer, solid layers of plastic, wherein the plastic of the foamed intermediate layer is a mixture of a first, rigid polymer component being selected from the group essentially comprising high density polyethylene and high melt-strength polypropylene and a second ductile (soft) polymer component selected from the group essentially comprising low density polyethylene and polypropylene. The plastic of the outer, solid layers is the same as said rigid polymer component of the foamed intermediate layer, and all layers are produced through a coextrusion process.

DE'611 is directed to a plastic bottle which can be squeezed with one hand to eject a liquid product through an orifice formed of foamed plastic. Preferably, the foamed plastic is polyolefin such as polypropylene or polyethylene or their copolymers, with 10-30% lower density than that of the non-foamed plastic. *See* the English Abstract.

DE'611 does not disclose or suggest every feature of the claimed invention. For example, *DE*'611 does not disclose or fairly suggest a foamed intermediate layer, wherein the layer is a mixture of a rigid polymer component and a ductile polymer component. As explained on page 3, line 11, et seq. of Applicants' Specification, the extruded/blow molded bottle of the present invention includes a foamed mixture of a rigid component which forms the skeleton or interstices in the foamed wall structure, while the ductile

polymer forms a skin or wall between the above-mentioned skeleton or interstices. Accordingly, a bottle of reduced weight and outstanding mechanical strength is manufactured. On the other hand, *DE '611* simply discloses a three layer bottle in which the intermediate foamed layer consists of only one polymer component (i.e., either polypropylene or polyethylene). *See* the English Abstract. Thus, clearly *DE '611* does not disclose a foamed intermediate layer which is a mixture of rigid and ductile polymers.

Nakagawa et al relates to the manufacturing of a hollow product and in particular to a method and apparatus for manufacturing a hollow plastic product having an irregular structure, such as a projection which projects outwardly from the outer surface of the product. Column 1, lines 12-17.


Nakagawa et al has been relied on for its alleged disclosure of a low density polyethylene layer as an intermediate layer. However, like *DE '611*, *Nakagawa et al* fails to disclose or suggest a foamed intermediate layer which is a mixture of rigid and ductile polymers. In fact, the intermediate layers disclosed in *Nakagawa et al* consist of one polymer component. *See* the materials tabulated at column 10, lines 20-25. Thus, even if combined in the manner suggested by the Examiner, one would not have arrived at the claimed invention. In short no *prima facie* case of obviousness is present.

In view of the foregoing, favorable consideration of the subject application on the merits is believed next in order, and is earnestly solicited.

If there are any questions concerning this paper or the application in general, the Examiner is invited to telephone the undersigned at his/her earliest convenience.

Respectfully submitted,

BURNS, DOANE, SWECKER & MATHIS, L.L.P.

By: 
Iurie A. Schwartz
Registration No. 43,909

P.O. Box 1404
Alexandria, VA 22313-1404
(703) 836-6620

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Attachment to Reply and Amendment Pursuant to 37 C.F.R. §1.111
dated May 22, 2001

Marked-up Claims 1 through 4.

1. (Amended) An extruded/blow [moulded] molded bottle having an extruded wall structure [(10)] comprising an intermediate layer [(11)] of foamed plastic and outer, solid layers [(12 and 13)] of plastic, [characterized in that] wherein the plastic of the foamed intermediate layer [(11)] is a mixture of a first, rigid polymer component being selected from the group essentially comprising high density polyethylene and high melt-strength polypropylene and a second ductile (soft) polymer component being selected from the group essentially comprising low density polyethylene and polypropylene, [for general purposes, that] said plastic of the outer, solid layers [(12 and 13)] is [of] the same [type] as said rigid polymer component of the foamed intermediate layer [(11)], and in that all layers [(11, 12, 13)] are produced through a coextrusion process.

2. (Amended) The extruded/blow [moulded] molded bottle as claimed in Claim 1, [characterized in that] wherein the mixing ratio of the first, rigid polymer component to the second, ductile (soft) polymer component in the foamed plastic layer [(11)] is between 1:3 and 3:1.

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Marked-up Claims 1 through 4.

3. (Twice Amended) The extruded/blow [moulded] molded bottle as claimed in Claim 1, [characterized in that] wherein the central, foamed plastic layer [(11)] takes up between 50 and 100% of the total weight of the wall material, while the two outer, surrounding plastic layers [(12 and 13)] together take up between 0 and 50% of the total weight of the wall material.

4. (Twice Amended) The extruded/blow [moulded] molded bottle as claimed in Claim 1, [characterized in that] wherein the two outer, surrounding layers [(12 and 13)] display substantially the same layer thicknesses.